

1 Introduction

1.1 Background

This 2030 Regional Energy Infrastructure Study (“Study”) is designed to provide an integrated, comprehensive analysis of the supply and demand issues to form the basis of the most cost-effective electric and natural gas supply¹ and distributed energy resource strategy with the goal of achieving a reliable and affordable energy future for the San Diego region.² Over the past 2 years, the region has faced extremely high and volatile energy prices. Like the rest of the state, the region has fallen behind in the development of needed energy-related infrastructure and faces the need for substantial energy infrastructure investments.

This Study is a collaborative effort that has been conducted by Science Applications International Corporation (SAIC), under the direction of the San Diego Regional Energy Office. The Study was made possible by the funding and active participation of the City of San Diego (City), the County of San Diego (County), the San Diego County Water Authority (CWA), the San Diego Association of Governments (SANDAG), the Utility Consumers Action Network (UCAN), and the Port of San Diego (Port). SDG&E and other key stakeholders provided significant input, review, insights and valuable information to help identify and evaluate key infrastructure issues facing the San Diego region. This Study will be updated on an annual basis by the SDREO.

1.2 Regional Energy Infrastructure Study Goals

The goals of this study are the following:

1. To evaluate the relative attractiveness of new electricity and natural gas supply and demand management projects for meeting the region’s need for reliable and affordable energy resources.
2. To identify a more diversified energy supply and demand management portfolio, including the potential role for distributed generation and renewable resources.
3. To evaluate the potential role of local government agencies to collaborate in providing new energy supply and demand management projects that will enhance the region’s energy self-sufficiency and security and reduce future risk.
4. To evaluate the impacts and tradeoffs of these energy supply and demand options on the environment.
5. To consider the implications of the growing interdependence of San Diego and Baja California as an integrated bi-national energy supply and consumption region.
6. To evaluate supply and demand technologies and strategies from the standpoint of their ability to positively impact economic development and retain dollars in the region.
7. To evaluate energy resources that can enhance the region’s local control to meet future demand.
8. To identify major resource limitations that would significantly impact energy infrastructure development and the ability to meet regional energy needs.
9. Contribute to price stability and seek lower cost resources and options that help reduce upward price pressures for natural gas and electric supply and use.

¹ This study addresses electricity and natural gas only. For the purpose of this study, the use of the term “energy” refers only to electric and natural gas use in the San Diego region. Transportation energy issues will be addressed in a future SDREO Study.

² The “San Diego Region” for purposes of this study includes San Diego County and the Tijuana region of Northern Baja, Mexico.

1.3 Study Approach

The study approached electricity and natural gas issues from three perspectives:

1. *Supply/Demand* of the commodity itself
2. *Delivery/Capacity* of the infrastructure that serves San Diego natural gas and electric customers
3. *Pricing* of the commodity and its delivered cost to the customer.

The time-periods in which these areas are considered are:

1. *Short-term* (now to 2006)
2. *Mid-term* (2006 to 2010)
3. *Long-term* (post 2010).

The study involved a comprehensive review of data sources on regional economic and energy markets, a review of federal and state policies and programs, extensive modeling of electric and natural gas supply and demand options and a review of key natural gas infrastructure issues facing the region. This approach led to the identification of strategic and programmatic opportunities, options and recommendations. The conclusions reached in this study are intended to provide input into the development of a comprehensive Regional Energy Strategy (RES).³ This Strategy will be developed by the Regional Energy Policy Advisory Council (REPAC) involving the major energy stakeholders, as well as the public, to guide the region's decisions on short-, mid-, and long-term energy initiatives.

The following activities were completed in the study:

- Extensive interviews and data collection from a variety of sources, ranging from project stakeholders to municipal agencies, community leaders, large commercial and industrial (C&I) end users, and other interested parties.
- Development of a set of scenario-based forecasts for natural gas and electricity, in addition to the modeling of power plant requirements of the Western States Coordinating Council (WSCC).
- Screening and evaluating the economic and system reliability impact of a diverse portfolio of energy efficiency, demand response, distributed generation and renewable resource investments and programs.
- Results of these analyses were used to identify and quantify the relative opportunities for energy infrastructure, end-use efficiency and distributed resource opportunities. This was accomplished through economic analyses that identified the avoided energy and capacity costs for electricity and estimated the unit energy supply curve cost for demand management options using net present value and levelized cost analysis.
- Ranking and prioritization of current and potential energy related projects was also developed for this study.

1.4 Organization of Report

Chapter 2 presents a situation analysis—which presents an assessment of the current energy environment of the region. Chapter 3 presents an analysis of gas supply and infrastructure issues and options. Chapter 4 presents a similar analysis for electricity issues and options. Chapter 5 discusses demand management issues and options, such as energy efficiency, demand response, distributed generation and renewable opportunities. Chapter 6 is an options and scenario analysis of balanced energy supply/demand to ensure adequate reserve margins and Chapter 7 presents a summary of key findings and implications.

³ See <http://www.sdenenergy.org/planning/policy.html>